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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/624,246

07/22/2003

James R. Massie

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06/25/2004

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EXAMINER

LARKIN, DANIEL SEAN

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

22

Office Action Summary	Application No.		Applicant(s)	
	10/624,246		MASSIE, JAMES R.	
	Examiner		Art Unit	
	Daniel S. Larkin		2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25,27,29-31 and 33-45 is/are allowed.
- 6) ☒ Claim(s) 11-14,21,23 and 46-48 is/are rejected.
- 7) ☒ Claim(s) 1-10, 15-20, 22, 24, 26, 28, and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some * c) ☐ None of:
 - 1. ☐ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

Applicant has stated that this application is a continuation of US Serial No. 09/803,268; however, this application does not contain the same invention that was disclosed in the prior application. This application, US Serial No. 10/624,246, is directed to a reference structure, optical measuring device, and flexure mechanism connected/coupled to an actuator supporting a sample. The prior application, US Serial No. 09/803,268, is directed to a reference structure, optical measuring device, and flexure mechanism coupled to a support for holding a cantilever.

Additionally, this application has one inventor, Massie, yet the prior application has two inventors, Massie and Proksch.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

Reference numeral "10", as shown in Figure 1A, does not appear within the written disclosure.

Reference numeral "11", as shown in Figure 1B, does not appear within the written disclosure.

Reference numeral "128" does not appear within the written disclosure as it pertains to Figure 2.

Reference numerals "154" and "156", as shown in Figures 3 and 4, do not appear within the written disclosure.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description:

Reference numeral -- 134 -- does not appear in Figure 6 as suggested by the disclosure on page 13, line 16.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "102" has been used to designate both a "support", as shown in Figure 2, and a "frame", as shown in Figures 5 and 6. The written disclosure

is not quite clear if these two elements, i.e. the support and the frame, are one in the same.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following limitations must be shown or the feature(s) canceled from the claim(s):

Mounting of a light source to an actuator, as recited in claim 23, and in combination with all of the limitations of claims 14 and 21; and

Utilizing a flexible disc as a movement isolating device, as recited in claim 33, and in combination with all of the limitations of claim 27. No new matter should be entered.

6. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The disclosure is objected to because of the following informalities:

Page 5, lines 25, 26, and 27: The term "multi-bar" should be corrected to read -- multiple bar --.

Page 10, line 7: The term "figure" should be corrected to read -- FIGURE --.

Page 10, line 10: The term "figures" should be corrected to read -- FIGURES --.

Page 10, line 26: The term "Figures" should be corrected to read -- figures --.

Page 12, line 3: The term "Figure" should be corrected to read -- FIGURE --.

Page 12, line 12: The term "Figures" should be corrected to read -- FIGURES --.

Page 12, line 24: Reference numeral -- 134 -- should be inserted after the term "bar".

Page 13, line 14: The term "Figures" should be corrected to read -- FIGURES --.

Appropriate correction is required.

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Use of a flexible disc as a movement isolating device connected to a reference structure generally around a perimeter of the disc, as recited in claim 33.

Claim Objections

9. Claims 1-10, 26, 28, and 32 are objected to because of the following informalities:

Re claim 1, claim line 7: The conjunction "and" should be deleted.

Re claim 3, claim line 2: A -- comma -- should be inserted prior to the term "but".

Re claim 5, claim lines 1-3: The term "multi-bar" should be corrected to read -- multiple bar --.

Re claim 7, claim line 1: The phrase "the metrology apparatus" lacks antecedent basis.

Re claim 9, claim lines 4, 6, 10, 12, 13, and 16: The term -- elongate -- should be inserted prior to the term "actuator".

Re claim 26, claim lines 2 and 3: The phrase "said reflecting surface" lacks antecedent basis.

Re claim 28, claim line 2: The phrase "the longitudinal axis" lacks antecedent basis.

Re claim 32, claim line 1: The phrase "said probe structure assembly" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 11, 14, 21, 23, and 46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by over US 5,196,713 (Marshall).

With respect to the limitations of claim 11, the reference to Marshall discloses an optical position sensor with corner-cube and servo-feedback for scanning microscopes comprising a microscope frame supporting a piezoelectric actuator (18) at a fixed end, wherein the free end of the actuator (18) is coupled to a sample holder/stage (14); a first reflector assembly/corner cube (34) fixed proximate to the free end of the piezoelectric actuator (18); a first electromagnetic radiation source (63A) fixed with respect to the frame and disposed to direct radiation onto the first reflector assembly (64A); and a first electromagnetic radiation detector (26A) disposed to receive light from the first source (63A) after it has been received and reflected by the first reflector assembly (64A) and to generate a signal indicative of a degree of longitudinal deflection of the piezoelectric actuator (18), see col. 9, lines 12-37.

With respect to the limitations of claim 14, the reference to Marshall discloses a sample holder/stage (14) coupled to an actuator (18); an optical measuring device including a light source (20) that generates a light beam, the measuring device being configured to change the direction of the beam in response to movement of the actuator (18), col. 6, lines 59-62; and a sensor (26) to detect the beam and generate a signal (29A, 29B) indicative of the movement of the actuator (18).

With respect to the limitation of claim 21, reference to Marshall shows the placement of a lens (22) intermediate the light source (20) and the sensor (26).

With respect to the limitation of claim 23, reference to Marshall shows coupling of the light source (20) to the actuator (18) through the stage (14).

With respect to the limitations of claim 46, the reference to Marshall discloses an objective (22) fixed to a reference structure/stage (14) coupled to an actuator (18), col. 6, lines 59-62; a light source (20) that generates a light beam, wherein an optical measuring apparatus changes the direction of the beam in response to movement of the objective (22); a position sensor (26) that detects the beam and generates a displacement signal (29A, 29B) indicative of movement of the actuator (18) in a direction perpendicular to a longitudinal axis of the actuator (18); and a sample coupled to the actuator (18).

With respect to the limitations of claim 47, the reference to Marshall discloses placing an objective (22) onto a reference structure/stage (14) coupled to an actuator (18), col. 6, lines 59-62; measuring movement of the objective (22), wherein movement of the objective is indicative of movement of the actuator (18) in a direction perpendicular to a longitudinal axis of the actuator (18); and coupling a sample to the actuator (18).

With respect to the limitations of claim 48, the reference to Marshall further discloses generating a light beam from a stationary light source (20); changing the direction of the beam in response to movement of the objective; detecting the location of the beam with a position sensor (26); and generating a displacement signal (29A, 29B) indicative of movement of the actuator (18).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,196,713 (Marshall) as applied to claim 11 above, and further in view of US

With respect to the limitation of claim 12, the reference to Marshall discloses all of the limitations of claim 11 including a cantilevered probe, which is held stationary, having a free end and a fixed end. The reference to Marshall fails to disclose a second reflector disposed to translate with the probe when the probe is deflected with respect to the piezoelectric actuator.

The reference to Khoury et al. discloses a combined scanning force microscope and optical metrology tool comprising a micropositioning stage for positioning the sample with respect to a stationary probe, as well as measuring the position of the stage. The reference to Khoury et al. also discloses a cantilevered probe (16) having a reflective surface disposed to translate with the probe (16) when the probe is deflected with respect to the piezoelectric actuator/micropositioning stage. Providing a cantilevered probe with a reflective surface would have been obvious to one of ordinary skill in the art as a means of measuring the amplitude and frequency of the tip motion so that more accurate adjustments can be made with respect to the distance between the sample and the tip.

With respect to the limitations of claim 13, the reference to Marshall fails to disclose a second electromagnetic radiation detector disposed to receive light reflected from the second reflector. The reference to Khoury et al. discloses that light reflected off the surface of the cantilevered probe (16) is directed to an electromagnetic radiation detector/laser heterodyne controller (32) and generates a signal indicative of a degree of deflection of the free end of the probe (16) with respect to the fixed end of the probe. Providing means for receiving light reflected from a cantilevered probe would have been obvious to one of ordinary skill in the art because the measurement of phase and amplitude of a probe tip (14) allows one to use these signals in a feedback loop to control the distance between the tip (14) and the sample surface so more accurate measurements can be made by maintaining a constant vibration amplitude or phase.

Allowable Subject Matter

14. Claims 1-10, 26, 28, and 32 are objected to, but would be allowable if corrected in accordance with the examiner's suggestions provided above in paragraph 9.

15. Claims 15-20, 22, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. Claims 25, 27, 29-31, and 33-45 are allowed.


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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
22 June 2004



DANIEL S. LARKIN
PRIMARY EXAMINER